

## Review Bonding Assignment - Chapter-2

- How does an ionic bond differ from a covalent bond?
- What is the difference between a sigma bond and a pi bond?
- What are co-ordinate covalent bonds? Illustrate with an example.
- Define the terms Lewis acid, Lewis base, Ligand, Hydronium ion, fullerene.
- Why do alloys have better/different physical properties than the pure metal? Explain hcp and ccp.
- NaCl has a co-ordination number of 6 and CsCl has a co-ordination 8 which has a better packing ability?
- What are allotropes? Give examples.
- Why does graphite conduct electricity?
- What are the differences between physical and chemical changes?
- Briefly summarise and explain the properties of ionic and covalent compounds
- Explain why electrical conductivity is a suitable test for ionic compounds
- Calculate the number of ions present in an ionic crystal having a bcc unit cell if all the 8 corners are occupied by the same ion?
- Explain bonding in  $C_2H_6$ ,  $C_2H_4$  and  $C_2H_2$ . Use hybridisation and draw orbital diagrams.
- In an ionic crystal element 'A' is present on the 6 faces of a cubic unit cell and element 'B' is present on the 12 edges of the cubic unit cell. What would be the formula of the compound?
- NaCl has an fcc unit cell. If Na ions are present in the body center and the edges of the unit cell and Chloride ions are present on the corners of the cubic unit cell and the faces, how
- What are intra molecular and inter molecular forces of attraction? Give suitable examples and explain.
- The most common oxides of period three are as follows  
 $Na_2O$ ,  $MgO$ ,  $Al_2O_3$ ,  $SiO_2$ ,  $P_2O_5$ ,  $SO_2$ ,  $Cl_2O$ ,
  - ☐ Classify the compounds as either ionic or molecular
  - ☐ Use electron dot diagrams or Lewis structures to show the formation of each compound
  - ☐ What properties would you expect to observe in the properties of each of the compound?
- Explain why  $NH_3$  is pyramidal where as  $BF_3$  is planar? Use hybridisation and VSEPR theory.
- What is the shape of the water molecule? Is the molecule polar? What type of hybridisation would be involved in this molecule?
- Methanol has a lower boiling point than Ethanol, give reasons.
- Hydrogen sulphide is a gas but water is a liquid at room temperature why?
- Which would have a higher melting point if solidified propane or decane, give reasons?
- Which of the following molecules would be polar and which of them would have only polar bonds.

$H_2O$	$NH_3$	$BF_3$	$BeCl_2$	$CCl_4$	$CHCl_3$	$CO_2$
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- The dipole moments of the following molecules are not zero how would you explain it?  $SO_2$ ,  $HF$ ,  $NF_3$ ,

- Explain bonding in the following molecules using Lewis structures

$PCl_3$	$NH_4Cl$	$PCl_5$	$ClO_4^-$	$N_2H_2$	$OF_2$	$H_2O_2$
$BF_4^-$	$XeF_4$	$ICl_3$	$XeOF_4$	$CN^-$	$ClO_4^-$	$P_2O_5$
$NO_3^-$	$SO_4^{2-}$	$H_2SO_4$	$PO_4^{3-}$			

- Identify the types of bonds present in the following compounds, what will be the shape of the complex ion, identify the type of hybridisation the metal in the complex ion undergoes
  - ☐  $K_4[Fe(CN)_6]$
  - ☐  $[Co(NH_3)_6]Cl_2$